

Senile Cataract Survey around Gezira State, Sudan: Case Study Al Shikh El Siem Hospital

Dr. Khansa Omer Edrees Ahmed*

*Khansa Omer Edrees Ahmed (B.Sc- M.Sc – Dr) University of Gezira- Faculty of Economics and Rural Development- Assistant professor – head of the Department of Statistics - Faculty of Economics and Management Studies, University of Sennar,

Abstract: Introduction: Senile cataract is a darkening in the lens of the eye it causes a weakness in consideration and lead to blindness. This study is conducted because senile cataract disease is one of the most common eye especially in elderly. Also to raise awareness about senile cataract, to create database on cataract disease and assist decision – maker in develop policies to reduce the disease. **Objectives:** To estimate the level of senile cataract disease in Gezira state and determine the ,socioeconomic and cultural factors that cause senile cataract in Gezira state. **Methods:** The study sample size is 800 respondent, 382 male and 418 female in Al Shikh El siem Hospital by Stratified Random Sampling method , data were collected by a questionnaire to patients' reporting to the hospital clinic and analyzed using SPSS program .The study used both descriptive and inferential statistics. **Results:** The descriptive statistics have shown that 51.5% of respondents have senile cataract and 48.5% of respondents don't have, senile cataract. The cross tabulation showed that most of the variables are significantly associated with The senile cataract disease such as (educational level, monthly income) the result also have shown that there other factors related to senile cataract such as (age, diabetics, Smoking, medicines, indicators related to the vision). Age is the most leading cause of senile cataracts (age increase the incidence of senile cataract by 26 times) .The respondents with diabetics increase the incidence of senile cataract by (10) times compared, to other respondents. **Recommendations:** The study recommended that Vision examination and follow-up are essential , especially for people with diabetes and Glaucoma .senile cataract is one of the disease that require a wornness . the ministry of health should make period campaign for a wornness about senile cataract.

Keywords: Senile Cataract- Risk Factors - Al shikh El siem Hospita

مسح الساد الشيخوخي حول ولاية الجزيرة ، السودان

دراسة حالة – مستشفى الشيخ الصائم

د. خنساء عمر ادريس أحمد*

ملخص الدراسة

المقدمة :

مرض الساد الشيخوخي هو اعتام في عدسة العين ويسبب ضعف النظر ويؤدي الي العمى. اجريت هذه الدراسة لان مرض الساد الشيخوخي واحد من اكثر امراض العين شيوعاً خصوصاً عند كبار السن. وايضاً لرفع الوعي حول مرض الساد الشيخوخي ، ولإنشاء قاعدة بيانات ومساعدة صانعي القرار لوضع سياسات للحد من المرض.

الأهداف: تقدير مستوى مرض الساد الشيخوخي في ولاية الجزيرة ، وتحديد لعوامل الاجتماعية والاقتصادية والثقافية التي تسبب مرض الساد الشيخوخي في ولاية الجزيرة.

المنهجية: حجم عينة الدراسة 800 مبحوث , 382 ذكور و 418 اناث من مستشفى الشيخ الصائم عن طريق العينة التطبيقية ، وجمعت البيانات عن طريق استبيان للمريض الذي يحضر لعيادة المستشفى , تم تحليل هذه البيانات إحصائياً بواسطة برنامج الحزم الإحصائية للعلوم الاجتماعية كما استخدمت الدراسة علي حد سواء الاحصاء الوصفي والاستنتاجي.

النتائج: عكس الإحصاء الوصفي أن نسبة المبحوثين المصابين بمرض الساد الشيخوخي تساوي 51.5% ونسبة المبحوثين غير المصابين 48.5 أظهرت الجداول التقاطعية وجود ارتباط معنوي بين مرض الساد الشيخوخي وبعض المتغيرات مثل (المستوى التعليمي، الدخل الشهري)، أيضا ارتباط معنوي مع عوامل الخطورة (العمر- السكر- التدخين – الأدوية- المؤشرات المتعلقة بالرؤية). العمر هو السبب الأكثر شيوعاً للإصابة بمرض الساد الشيخوخي (العمر يزيد معدل خطر اصابتهم بالساد الشيخوخي بمعدل 26 مرة) المبحوثين المصابين بالسكري يزيد معدل خطر اصابتهم بمعدل 10 مرات مقارنة بالآخرين .

التوصيات: اوصت الدراسة بضرورة كشف النظر والمتابعة الدورية خصوصاً المصابين بالسكري والجلوكوما . مرض الساد الشيخوخي من الأمراض التي تحتاج الي وعي ،يجب علي وزارة الصحة أن تعمل حملات للتوعية بمرض الساد الشيخوخي.

الكلمات المفتاحية: الساد الشيخوخي – عوامل الخطورة-مستشفى الشيخ الصائم .

حنساء عمر ادريس أحمد(بكالوريوس –ماجستير – دكتوراه) جامعة الجزيرة – كلية الاقتصاد – استاذ مساعد ورئيس قسم *1
الإحصاء والاقتصاد القياسي كلية الاقتصاد والعلوم الإدارية- جامعة سنار.

1- Introduction

Senile cataract or The other name 'age-related cataract is known as ambiguity of the lens of the eye, there is people are 50 years old. (Murthy G,2008) This is most common type of cataract the effect equal persons of either sex in age of 50 and over years. The people aged 70 years, over 90% of the develop senile cataract (Resnikoff ,2002). . In Sudan senile cataract is one of the basic problem to consider. About 50% of the world's blind infected from senile cataract (WHO,2013). There are some risk factors increase the senile cataract including diabetes , family history, , smoking and exposure to the sun (Glynn R,2009). Prevention includes eye examinations, stop smoking, diet health and wear sunglasses.

2- Materials and Methods

2-1 Study Population:

Gezira is one of 18 states from Sudan. The state located between the white Nile and blue Nile. It has space of 27,549km². The capital of the Gezira state it is Wad Madani .(Wad Madani population ,2001).

about eighty five mile (one hundred and thirty – six kilometer) south- east of capital of sudan (Wad Madani description ,2007). Al shikh El siem hospital It had been instructed at the year 1990 . to be the first specialized dentist hospital out of the National Country of the State , And the only governmental hospital in Gezira state . in the hospital 25 doctor just 11 specialists . The hospital delivered its services for all Gezira state and outside the state , at the overage of (150–300) patients daily The services in the field of ophthalmology diseases . We find that patient outside the

state where not included in the study but they were confined to the Gezira state .

2-2 Data Sources:

The study will depend on primary data about questionnaire from senile cataract disease patients' by direct compassing from Al shikh El saim hospital disease.

2-3 Sample Size:

The sample size was determined by the equation:

$$n_0 = \frac{z^2_c pq}{d^2}$$

n_0 : is the primary sample size

P: community parameter expected

Z: the standardized normal distribution with (100- α)

q: the complementary ratio of P

d: the statistical exactness

$$n^* = \frac{(2)^2 * 50 * 50}{25} = 400$$

$$N = 2 * 400 = 800$$

The study sample size is 800 respondent about Stratified Random Sampling, 382 male and 418 female in Al Shikh Elsiem Hospital Gezira State .

reports frequency distribution according to locality, wad medani 11.9% south Gezira 15.5% Al kamleen 11.4% Al hassaheesa 17.0% Almanagil 25.4% East Gezira 12.9% OumAlGoraa 6.0%. And number of population is Gezira state (3575280) . The sample was 800 members distributed among the localities of the state According to population census (2008). The collected data by using questionnaire, and have been analyzed by SPSS version 20) .

Table (1) Population

State and localities	Population	Sample size in the study
Gezira	3575280	800
wad medani	423863	124
Southern Gezira	555250	91
Al kamleen	401930	136
Al hassaheesa	606389	203
Al managil	906216	103
East Gezira	463154	48
Oum Al Goraa	218478	95

Source: Sudan 2008 Census, and senile Cataract survey

3- Results:

Table (2) shows that most of the respondents (54.4%) in 60 and over years because it is higher percent in the sample. with a mean 57.9. Std. deviation (SD) 12.1 and standard error (SE) .43 of which gives a 95% confidence limits between 57.1 – 58.7 , 21.1% are in the age group 40- 45 ,with a fewer at the age group (46-50, 56-60), and 53% of persons over the age of 75 years, have at least one senile cataract. The Chi-square value is 79.090, degree of freedom is 8 and the probability value is 0.000. That there is highly significance association between having senile cataract or not and age group .

The percent of females it is higher than males. For education level, most of the respondent Illiterate (32.1) senile cataract prevalence inside Gezira It is to be noted that the level of education does not reflect of the education status of respondent. we asked a question about years of education . The result shows higher percent in the first group 47.4% of the respondents no years of education because this group illiterate .with a mean 4.5 ,Std. Deviation (SD) 5.4 and standard error (SE) .19 of which gives a 95% confidence limits between . 44.1% of people have non monthly Income because the most respondents in this group without work and old age , And ~36% had an income of between SP500

and SP700. This result reflects the economic situation. For occupation, (31.4) % .house wife and 18.4% without work.

Table (2) demographic factors

Variable	N (%)
Age	
40-45	169(21.1)
46-50	95(11.9)
51-55	120(15.0)
56-60	106(13.3)
60 and above	310(38.8)
Sex	
Male	382(47.8)
Female	418(52.3)
Education level	
Illiterate	257(32.1)
Khalawi	107(13.4)
Primary	189(23.6)
Intermediate	148(18.5)
Secondary	72(9.0)
University and above	27(3.4)
Monthly income	
Non	353(44.1)
< SP 500	132(16.5)
SP500- SP<700	174(21.8)
SP700- SP900	112(14.0)
> 900	29(3.6)
Occupation	
House wife	251(31.4)
Employer	112(14.0)
Worker	188(23.5)
Farmer	58(7.3)
without work	147(18.4)
Free job	44(5.5)

Source: spss output based on data for researchers senile Cataract survey

Table (3) explicates The majority of respondents 82.1% suffer from lack vision.17.9 % of respondent complete vision . percent of respondents with unclear vision is double that of respondents with clear vision. Some of respondents have just clear black. 46.5% of respondents have difficulty of night vision. 43.0% are affected by sun or intensive light. Some of respondents have clear double vision and 73.1% don't read and write clearly. All variables Symptoms of senile cataract.

Table (3) indicators the vision

Variable	N (%)
Lack vision	
Yes	657(82.1)
No	143(17.9)
Unclear vision	
Yes	657(82.1)

No	143(17.9)
Unclear color	
Yes	382(47.8)
No	418(52.3)
Difficulty vision	
Yes	372(46.5)
No	428(53.5)
Eye Accident	
Yes	188(23.5)
No	612(76.5)
Affected light	
Yes	344(43.0)
No	456(57.0)
Double vision	
Yes	277(34.6)
No	523(65.4)
Read clearly	
Yes	215(26.9)
No	585(73.1)

Source: spss output based on data for researchers senile Cataract survey

Table (4) discussed that adjusted ORs(95%CI) of Associated risk Factors for senile cataract :The results of binary logistic-regression analyses showed that senile cataract were statistically significantly and positively associated with risk factor .The crosstab and chi square analysis the dependent variable(having or not having senile cataract) is tested for association with all independent variables.

Table(4) Cross tabs And fitting logistic regression model

Independe nt	Cross tabs		logistic regression(95%CI)				
	χ^2	Sig	B	S. E.	Wald	Sig	Odds
Lack in vision	83.0	.000	-1.4	.47	9.9	.002	4.4
Unclear vision	131	.000	-.34	.38	.83	.036	3.2
Affected light	73	.000	-.26	.30	.74	.038	3
Double vision	66	.000	.37	.31	1.4	.023	5
accident in eyes	246	.000	4.2	1.4	8.6	.000	6
Smoking	17.6	.000	.10	2.6	.00	.008	6
Diabetics	9.6	.008	-.21	.38	.32	.057	10

Medicines	28.2	.000	-.25	.05	21.2	.000	3.4
-----------	------	------	------	-----	------	------	-----

Source: spss output based on data for researchers senile Cataract survey

Table(5) shows that the results of binary logistic regression model for senile cataract disease status as dependent variable and the (locality-Age) of respondents as independent variables . The variable of locality, two categories were show significant correlation with the dependent variable , Almanagil and East Gezira localities . for Almanagil locality the Wald statistic = 7.927 with P-value(0.005).Those individuals from Almanagil increase the incidence of senile cataract by (7) times compared with wad madani locality (reference category) . for East Gezira locality which means that population of East Gezira increase the incidence of senile cataract by(4) times compared with wad madani, other localities were insignificant with reference to wad madani. Also The variable of age (60and above) increase the incidence of senile cataract by (26) time compared with reference category. (46-50) year increase by (1.5) time . (51-55) year increase by (3.4) time and (56-60) year increase by (17.8) and 60+ year increase by 25.6 .

Table (5) stepwise logistic regression

Localities and age	B	S.E	Wald statistics	p. value	Odds
Wad madani			14.5	.042	
South Gezira	.419	.38	1.1	.275	2.9
Al kamleen	-.16	.42	.14	.708	1.7
Al hassaheesa	-.55	.37	2.2	.137	5.3
Al managil	-1.1	.39	7.9	.005*	7.4
East Gezira	-1.0	.44	5.1	.023*	3.5
Oum Al Goraa	-.24	.53	.20	.649	2.6
40-45 (Age)			4.2	.036	
46-50	.249	.40	.38	.534	1.5
51-55	.023	.37	.05	.950	3.4
56-60	.434	.36	1.4	.023	17.8
60+	.589	.34	2.8	.008	25.6

Source: spss output based on data for researchers senile Cataract survey

4- DISCUSSION :

Cataracts happen in low to medium socioeconomic background people , and widespread in developing countries(Murthy G,2008).The objective of this study was enhance methodology of ophthalmic diseases and add new flow data also to estimate the level of senile cataract

disease in Gezira state and to determine the factors that cause senile cataract disease .

in 2015 the number of patient in Al shikh El siem hospital about (20594 case) who are they (1413 case) incidence cataract , in 2016 (17687 case) who are they (1470 case) form here we note that The number of doctors does not match the number of patient . .

In this study; 51.5% % of the studied cases had senile Cataract This was lower than findings of a study in North India (Vashist P, 2011)the prevalence in people aged ≥ 60 58%.15.

Prevalence was higher in females than males (52.3% were females and 47.8% males).Agree with study in Indian (Vashist P, 2011).

Regarding education level this study agree with study (AREDS) the study concluded the higher level of education reduced risk factors of cataract. (Jessica R , 2011).Also study in makkah eye in khartoum (Hiba, Mohammed2011). Showed lack of education and knowledge for older people .Either smoking:14.3% of respondents are smoking . This study agree with Smoking in the (AREDS) population, smoking had a significantly higher risk of cataract surgery and cortical cataract [9] .These agree with study in India. It has found There is a relationship between reducing the dose for smokers and stopping smoking can reduction the risk factor of cataract (Krishnaiah S,2005). Other study 28.1% of studied cases were smokers but 22.7% of them stopped(Wafa,2017).

In our study; 23.8% of respondent suffer of diabetes, The people has diabetes period (1-3) years with a mean 1.02, Std. Deviation (SD) 2.6 and standard error (SE) .09 of which gives a 95% confidence limits between(0.84– 1.19) , (3.0%) has diabetes period 4-6, 2.4% has Diabetes period 7-9 , 2.9% has diabetes period 10 years and over , 81.9% don't period. Diabetes it is a risk factor of senile cataract. These findings agree with another study .(Tan JS,2008) Diabetes has been linked with increased risk of cataract .

23% aged between 40-50 years old, 28.3% aged between 51- 60 years old and 38.8% aged 61+ most of the respondents are in 60 and over years because it is higher percent. disagree with study in Northern Saudi Arabia.[12] 53.1% aged between 50-60 years old, 32.8% aged between 61-70 years, 12.5% 71-80 years and 1.6% aged +80. In our study found positive relation between age and senile cataract .Age increase the incidence of senile cataract agree with study (AREDS) for all types of cataracts the old age was a significant risk factor(Jessica R,2011).

5- CONCLUSION

Most cases of cataract go back to age .The result of this study is common age-related problems. According to the baseline , increases when people getting old . Also to raise awareness about senile cataract ,to create database on cataract disease and assist decision –

maker in develop policies to reduce the disease. And to enhance the methodology in the area of cataract and to add new stock of data.

6- Recommendation

It was recommended As a person grows up in age he constantly examine his eyes ,Senile cataract is one of the diseases that require awareness .The ministry of health should make period campaigns for awareness, also to increase the number of eye doctors and increase the number of hospital. Illiteracy appear to be significant predictors for senile cataract in this respondent and further investigation is required to explore their influence.

REFERENCES

- 1- Glynn R, Rosner B, Christen W (2009): Evaluation of risk factors for cataract types in a competing risks framework. *Ophthalmic Epidemiol* ., 98–106.
- 2- Hiba Mohammed Elawad and Mohammed Elhassan Ali Elawad (2011) The Self-Expressed Needs for Sudanese Patients with Senile Cataract. Faculty of optometry and visual science University of Alneelain, Khartoum, Sudan. Elawad HM, Elawad MEA (2011) . *J Clinic Experiment Ophthalmol* 2:158. doi:10.4172/2155-9570.1000158.
- 3- Jessica R. Chang, BA, Euna Koo, BS and Emily Y. Chew, MDRisk(2011) : Age Related Eye Disease Study (AREDS) Ophthalmology. Author manuscript; available in PMC 2012 Nov 1. Published in final edited form as: *Ophthalmology*. 2011 Nov; 118(11): 2113–2119. doi: [10.1016/j.ophtha.2011.03.032]
- 4- Krishnaiah S, Vilas K, Shamanna B (2005): Smoking and its association with cataract: results of the Andhra Pradesh eye disease study from India. *Invest Ophthalmol Vis Sci.*, 46:58–65.
- 5- Murthy G, Gupta SK, John N, Vashist P(2008): Current status of cataract blindness and Vision 2020: the right to sight initiative in India. *Indian J Ophthalmol.*, 56: 489-494
- 6- Resnikoff, Pascolini, Etya'ale, Kocu, Pararajasegaram, Pokharel , (2002). Global data on visual impairment in the year 2002. *Bull World Health Organ* 2004;82:844-51
- 7- Simmons D, Clover G, Hope C (2007): Ethnic differences in diabetic retinopathy. *Diabet Med.*, 24: 1093–1098.
- 8- Tan JS, Wang JJ, Mitchell P (2008). Influence of diabetes and cardiovascular disease on the long-term incidence of cataract: the Blue Mountains eye study. *Ophthalmic Epidemiol*. 2008;15:317–27.
- 9- Vashist P, Talwar B, Gogoi M et al. (2011): Prevalence of Cataract in an Older Population in India: The India Study of Age-related Eye Disease. *Ophthalmology*, 118(2-19):272-278.

- 10- Wad Madani (description) Encyclopedia Britannica, 2007.
- 11- Wad Madani (population), Microsoft Encarta , online Encyclopedia 2001
- 12- Wafa Mohammed Falah Alanazi1, Najah Salah F Alanazi1, Hanan Khalid Alotaibi1, Fatimah Fahad (2017) : Senile Cataract in Arar, Northern Saudi Arabia: Hospital Based Study. The Egyptian Journal of Hospital Medicine (October 2017) Vol. 69 (7), Page 2930-2934.
- 13- WHO (2013) "Health Topics: Cataract". World Health Organization – Eastern Mediterranean Regional Office. Archived from the original on 2013-09-27.